The European Proceedings of
Social and Behavioural Sciences
EpSBS

www.europeanproceedings.com
e-ISSN: 2357-1330

DOI: 10.15405/epsbs.2021.07.55

LEASECON 2020
International Conference «Land Economy and Rural Studies Essentials»

INFLUENCE OF DEMOGRAPHY ISSUES ON ECONOMIC POLICY OF IMPORT FOOD SUBSTITUTION

Marina V. Muravyova (a)*, Igor L. Vorotnikov (b), Konstantin A. Petrov (c)
*Corresponding author

(a) Saratov State Vavilov Agrarian University, Saratov, Teatralnaya square, 1, Russia, muravmar2007@yandex.ru
(b) Saratov State Vavilov Agrarian University, Saratov, Teatralnaya square, 1, Russia
(c) Saratov State Vavilov Agrarian University, Saratov, Teatralnaya square, 1, Russia

Abstract

The paper briefly discusses the issues of demographic impact on the processes of import substitution in food production. The review of scientific research on the relationship between demography and import substitution through the solution of the problem of hunger is presented. The analysis of sources shows that for a significant part of the world, the problem is solved through the development of agricultural production. It is the process of filling the market with high-quality national products that affects the level and quality of human life, determines the health of the nation and reduces the mortality rate. The paper presents the results of the study of the impact of demographic changes on the socio-economic development of domestic food production, lists the measures of agricultural policy to maintain a balance between demographic changes and provide the population with food. The methodology for the calculation of the risk coefficient of the import dependence of food market by demographic characteristic is developed. The risk of import dependence for different countries of the world is calculated, which is presented graphically. The paper highlights the measures of agrarian policy to maintain a balance between demographic changes, providing the population with food and agricultural protectionism (including active state demographic policy, support for programs to provide various social groups with national food products).

Keywords: Agricultural markets, agriculture, demography, food security, import substitution policy

https://doi.org/10.15405/epsbs.2021.07.55
Corresponding Author: Marina V. Muravyova
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

1. Introduction

The idea of zero hunger is included in the vision of global food security up to 2030. The problem is controversial in terms of importance for different groups of countries due to the differences in social conditions, agricultural production opportunities, resources for agricultural production, as well as the population of the country, which should be provided with food resources. The different causes of hunger give rise to related scientific research in the fields of hunger hermeneutics (Kaplan, 2020), the sociology of hunger (Chakraborty & Acharya, 2020) and the geography of hunger (Hasan & Habiba, 2015). The issues of hunger and malnutrition are most acute in African countries, Asia and South America, which attracts researchers to determine the causes and possibilities of their elimination.

For example, such studies have been carried out in Nigeria to identify malnutrition, food security and land use planning (Owoo, 2020). The solution of hunger issues poses a dilemma for researchers from different countries about the possibilities of importing food or increasing the efficiency of national agriculture. The choice of the second path in the case of import dependence makes agricultural policy makers choose the measures to protect the market in different countries of the world. For example, in Cuba, the access to land resources is stimulated as a measure of import substitution (Botella-Rodríguez, 2019), the expansion of regulatory requirements for food in the countries of the European Union (Kühn, 2019), a fairly wide range of measures also exist in Russia, which associated with the war of sanctions.

In addition, import substitution policy should take into account not partial, but full-fledged substitution of imported food based on rational nutritional norms and demographic component. It is demographic shifts that are affecting food supplies and production. They also determine food security (Staroverov & Vartanova, 2019). The range of research issues on the interaction of the demographic factor and agri-food systems is quite wide: from the impact of rural demography on production volumes to the analysis of the impact of migration on food imports (Arslan et al., 2018).

2. Problem Statement

The study of the regularities of the impact of world demographic changes on the national policy of food import substitution determines the choice of tools for the development of agri-food systems.

3. Research Questions

The subject of the research is the economic relations of agricultural policy makers on the problem of the implementation of the processes of import substitution of food and the protection of national food security under the influence of the demographic factor. The research objectives include:

- the study of the impact of demographic changes on the socio-economic development of national food production;

the consideration of agricultural policy measures to maintain a balance between demographic changes, providing the population with food while implementing a policy of agricultural protectionism.

https://doi.org/10.15405/epsbs.2021.07.55
Corresponding Author: Marina V. Muravyova
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

4. Purpose of the Study

The purpose of the paper is to identify the patterns of influence of demography changes on the national processes of import substitution.

5. Research Methods

The study materials were scientific research on the impact of demography on import substitution, published in national and international scientific citation databases, statistical materials according to Russian Statistics Service and the international statistical database of FAO UN, the data from information resources of national services for the management of agriculture and food systems.

The main research methods used to obtain the results were monographic, analytical and logic.

6. Findings

The managerial decision making by national agrarian policy makers on the development of the full chain from "farm to table" is associated with the balance of compliance of food production opportunities at all stages with the number of consumers. In addition, the production of agricultural raw materials for food products, as well as the development of agriculture, depends on the number of rural residents as a potential labor resource and human capital of the agro-industrial complex. It is the demographic conditions for the development of agriculture that are one of the factors in the implementation of import substitution policy.

We consider the aspects of the manifestation of demographic influence on national food production.

The demand for food is determined by the number of consumers and the composition of the consumption structure, depending on national preferences and quality of life.

The population of the planet and the population in most countries of the world have grown. Moreover, there has been a significant growth rate in food production since the 70s of the 20th century due to the introduction of innovative technologies in crop and livestock farming, in the areas of automation and digitalization, genetics and breeding. The development of technology has destroyed the foundations of the Malthusian idea of the crisis of world hunger. However, even with significant production rates, the goal of the achievement of zero hunger in the world still remains. Moreover, both processes (demographic and production) have growth boundaries. During the study of statistical data on forecasting the demography of different countries of the world several options for the ratio of the rate of change in the population and the growth of food resources were determined. The authors calculated the risk of food import dependence by demographic using the formula.

The risk of food import dependence on a demographic basis (RFIDDB) is the ratio of the population growth rate (PGR) to the increase in the rate of production of agricultural raw materials and food (RPARMF).

$$\mathrm{RFIDDB} = \frac{\mathrm{PGR}}{\mathrm{RPARMF}} \qquad (1)$$

https://doi.org/10.15405/epsbs.2021.07.55
Corresponding Author: Marina V. Muravyova
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

1. If RFIDDB > 1, then the national agricultural production does not meet the needs of the population for food. Moreover, there are two scenarios: either the population growth is very high, or production lags behind.

2. If RFIDDB <1, then national agricultural production contributes to food security. The lower the indicator, the higher the export orientation.

The calculation of the indicators allowed calculating the risk of food import dependence by country (Figure 1).

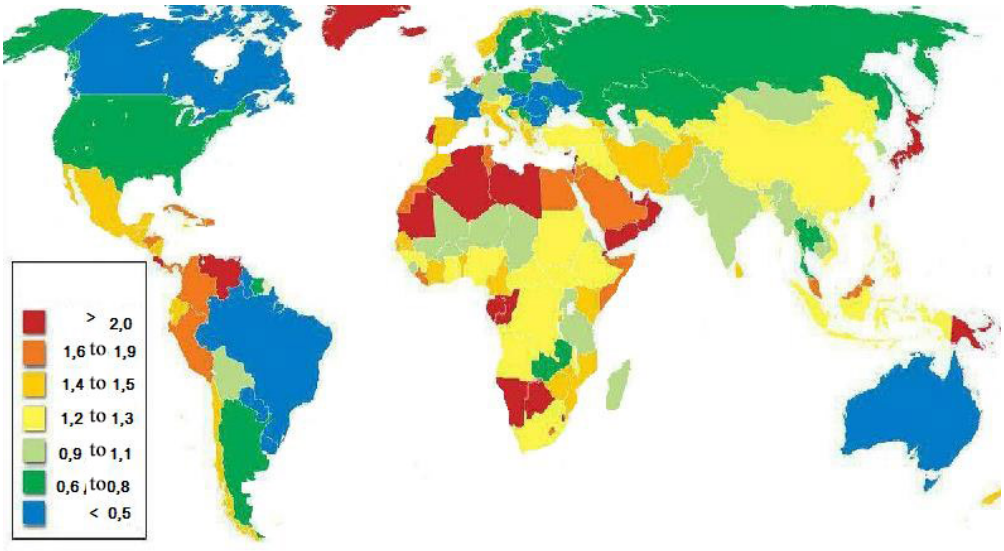

Figure 1. The risk of food import dependence on a demographic basis

The data were calculated using average values from 2014 to 2019. However, it is necessary to take into account that the situation does not include the demographic changes of 2019, including the population decline due to the excess of the level of natural deaths caused by COVID-19 pandemic for several countries of the world (Bakalis et al., 2020). The effect of demographic changes will be assessed in the post-pandemic period, but in countries with a high proportion of aging populations, demographics will change relative to the last decade (Albisu et al., 2012). Another future negative factor will be the reduction in production volumes by an average of 20-30% due to resource depletion, which will aggravate the food situation of import-dependent countries.

Demographics are also connected to food demand factors. Food markets are dynamic and consumer preferences are heterogeneous. The most significant growth in demand is occurring in regions where food security problems already exist (for example, Asia and Africa). (Umberger, 2015). Unlike other goods, food has an inelastic demand, but it is directly corrected by the number of consumers.

Rural demography leaves the imprint on the production of import-substituting products and forms the potential of human capital for agriculture in most countries of the world (Muravyova, 2013). With the development of automation processes, robotization, the introduction of elements of artificial intelligence in agricultural production, there is a decrease in the need for personnel, especially in countries with industrial agricultural sector. The process of urbanization has already facilitated the outflow of rural

https://doi.org/10.15405/epsbs.2021.07.55
Corresponding Author: Marina V. Muravyova
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

residents to cities in most countries of the world, but this is balanced by the development of innovative technologies in the agricultural sector and the formation of large industrial players.

The effect arises in which the rate of intensification of agricultural production exceeds the need for personnel: the more knowledge-intensive process is formed in the industry, the lower the degree of employment. At the same time, the share of high-tech jobs in the sector (although more slowly than in other sectors of economy) is increasing. However, a negative manifestation also arises: high-tech jobs take away the opportunity to earn money from socially dependent workers living in rural areas. The released labor force flows to cities (both in the form of seasonal work and in the form of a complete change in the rural way of life and place of residence), reoriented towards the search for income in other sectors of economy.

The main measures of agrarian policy to maintain a balance between demographic changes, provision of the population with food and agricultural protectionism include:

- the active state demographic policy aimed at the support of the rural population as a potential for the formation of professional personnel for the production of import-substituting food;
- the support of the programs for the provision of various social groups with national food products; for example, national programs of free meals for students with the obligatory inclusion in them of products of national producers of high quality according to rational standards. Large-scale purchase generates strong domestic demand and also helps to reduce the financial burden on child support, which is an impulse to stimulate birth rate;
- the measures to form the image of domestic food purchase;
- the provision of adequate nutrition helps to increase life expectancy, which reduces the mortality rate.

7. Conclusion

In conclusion we should state that the demographic changes affect the import substitution policy in two directions: changes in the quantitative demand for food and changes in the formation of labor resources in the production and sale of import-substituting food. In those countries of the world where politician pay little attention to the issues of high-quality and full provision of the population with domestic food, the problem of the negative consequences of import dependence is acute.

The solution is to intensify agrarian policy measures in order to maintain a balance between demographic changes, food supply and agricultural protectionism.

Acknowledgments

The research was carried out within the framework of the grant 18-010-00607 of RFBR.

References

Albisu, L., Gracia, A., Azucena, A., & Sanjuán. (2012). Demographics and Food Consumption: Empirical Evidence. *The Oxford Handbook of the Economics of Food Consumption and Policy*. https://doi.org/10.1093/oxfordhb/9780199569441.013.0031

Arslan, A., Egger, E.-M., & Winters, P. (2018). Migration, Demography, and Agri-Food Systems.

Bakalis, S., Valdramidis, V., Argyropoulos, D., Ahrné, L., Chen, J., Cullen, P. J., Cummins, E., Datta, A., Emmanouilidis, C., Foster, T., Fryer, P., Gouseti, O., Hospido, A., Knoerzer, K., LeBail, A., Marangoni, A., Rao, P., Schlüter, O., Taoukis, P., & Van Impe, J. (2020). How COVID-19 changed our food systems and food security paradigms. *Current Research in Food Science. 3.* https://doi.org/10.1016/j.crfs.2020.05.003

Botella-Rodríguez, E. (2019). The Agrarian Question in Cuba: Food Import Substitution, Land Reform and Repeasantisation in the Global Era (1959-2018). *Bulletin of Latin American Research 38*(8). https://doi.org/10.1111/blar.12848.

Chakraborty, A., & Acharya, S. (2020). Sociology of hunger. *National Conference on "Food and Nutrition Security – Thus Far and Further"*. Retrieved on 30 March, 2021, from https://www.researchgate.net/publication/344432143_sociology_of_hunger#fullTextFileContent

Hasan, S., & Habiba, U. (2015). Anthropogenic Causes: Population Pressure, Demographic Changes, Urbanization and Its Implication on Food Security. https://doi.org/10.1007/978-4-431-55411-0_2

Kaplan, D. (2020). "Hunger Hermeneutics". *Topoi. 1-7.* https://doi.org/10.1007/s11245-020-09729-8

Kühn, M. (2019). 20. Food import into the EU: in regulatory transition. https://doi.org/10.3920/978-90-8686-885-8_20

Muravyova, M. V. (2013). Demographic determinant of sustainable rural development in foreign countries. *Bulletin of the Saratov State Agrarian University. N.I. Vavilov, 1*. 77-81.

Owoo, N. (2020). Demographic Considerations and Food Security in Nigeria. *Journal of Social and Economic Development.* https://doi.org/10.1007/s40847-020-00116-y

Staroverov, V., & Vartanova, M. (2019). Food security in Russia is the most important component of the country's demographic policy. *Journal of International Economic Affairs.* https://doi.org/9.2851.10.18334/eo.9.4.41461

Umberger, W. J. (2015). Demographic Trends: Implications for Future Food Demand. Paper prepared for Agricultural Symposium Federal Reserve Bank of Kansas City. July 14-15. https://www.kansascityfed.org/~/media/files/publicat/rscp/2015/umberger-paper.pdf?la=en